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TRACK AND FIELD ATHLETICS FOR COACH AND CONTESTANT

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INTRODUCTION

Interest in all forms of physical education is today more marked than ever before, and the value of training, such as a boy receives in track and field athletics, is now recognized as of great importance in his education, in teaching him the elements of sportsmanship, and in helping him to build a strong, virile body which will be an asset to him throughout his life. The college and ex-college track and field athletes who enrolled for military or naval service in the great war were almost without exception found to be free from physical defects.

In the majority of cases the coaches charged with the instruction of the young track athletes in the schools in this country, have not had practical experience in all of the events which are found on the usual program. The author of these pages, who has had considerable experience both as a competitor and a coach, is pleased to offer the result of his experience to such as these, hoping that the suggestions may be of some value to them.

While the following chapters have been written primarily for track and field coaches and athletes, at the same time it is hoped that they may be of some value to others who may be interested in track and field athletics.

The author has endeavored to make his explanations as clear as possible so that the novice may understand the progressions in the form in the various events. Further, since he has written these suggestions for instructional purposes, he has avoided historical narrative and has condensed his material as much as possible.

The pictures have been taken of men in action in the various events for the purpose of demonstrating the proper form by stages.

An athlete now and then will be found who may excel in performance while using a different form than the one described, but in the great majority of instances the best results will be obtained by the athlete who uses the standard form.

SUGGESTIONS TO COACHES

There are four main points to be considered in developing, coaching, and conditioning a track man or track team. These are as follows:

1. The form in the different events and how to teach it.

2. The selection of the men for the events in which they can make the best records.

3. The kind and amount of work to be prescribed for each athlete.

4. The care of the body, including bathing, massage, diet, and sleep.

The success of a track coach depends largely upon his judgment and knowledge of the foregoing items, as well as upon his ability to express himself, so that he will be easily understood by his pupils.

In order to acquire this judgment and knowledge, the young coach should practice the different events, should study and carefully observe athletes in action, and should consult the athletes relative to their form and condition. Many of the best coaches of the day have spent lots of time after they became coaches in acquiring a knowledge of the events in which they had never competed.

The man who has been a hurdler, pole-vaulter, or sprinter should be able to tell at a glance what mistakes a beginner makes, and if he is an experi-

enced coach, he should have a good idea whether the faults can be corrected and, if so, how. If the pole vaulter's run is wrong or his method of carrying the pole is bad, he notes the mistakes. Further, he should be able to note wherein the athlete is weak or undeveloped and to prescribe the right kind of developmental exercises to correct the weakness.

In addition, it may be suggested that, unless the coach is enthusiastic about his work and really enjoys it, he will probably fail. Further than this, the coach must be a leader and a good disciplinarian.

In high school and college athletics, correct instruction in the form in the different events is very important, because the coach is continually confronted with the problem of developing new men to fill the vacancies which occur each season and, likewise, because a majority of the candidates who report for work are usually men who have had little or no experience.

It is generally a good rule in teaching, especially in teaching inexperienced men, to explain only one point at a time and not to take up new lessons until the details of the first have been mastered. This applies especially to such events as jumping, hurdling, and the weight events, where form counts for so much and which is often difficult to acquire.

In this book, each of the regular track and field events used in intercollegiate and interscholastic competition is dealt with, both from the standpoint of the fundamentals of the beginner and the final work of the experienced athlete in preparation for the contest.

In dealing with the different events, the amount of daily work prescribed for each individual (and this is a very important item) is subject to a great deal of variation. The work suggested in these chapters may be considered as an average for a college man of nineteen or twenty years of age. For high school boys from fifteen to eighteen years of age, the work should be somewhat lighter.

It is always better that an athlete should be underworked, rather than overworked, but this should not be construed as meaning that the coach should hesitate to prescribe a fair amount of work for his men. The athlete who is afraid of work usually never amounts to much. He should be willing and eager for work, and the coach should properly regulate his activities. It may be well said that, in the practice of track athletics, the men do not need to be driven, but they should be impressed with the fact that they must exert themselves to the limit to get the best results in competition.

In conclusion, the best age for boys to begin the practice of track and field athletics is when they are still young. At this time, they should lay the foundation for future success by observing the laws of health, by acquiring the proper functional development, and by working by easy stages for stamina and endurance. Championships are not easily won, and the boy who would be a champion must be prepared to work faithfully throughout a long preparatory season, which may be several years in length, and to forego the pleasures which will dissipate his strength, in order to achieve success.

TRAINING

I. Value of Massage for Track Athletes.

Following are arguments which one frequently hears against the use of massage for athletes. 1, If you start it you will have to keep it up. 2, It weakens the man massaged. 3, If a man is accustomed to a massage before a contest he will not do well if for some reason or other he fails to receive one. 4, It does not pay to coddle athletes.

As for the first, massage is of value in training an athlete and should be kept up but if discontinued it does not necessarily follow that the man affected will be incapacitated for competition. As regards the second, massage is passive exercise and does not weaken a man any more than active exercise. In fact it requires no exercise of the will power on the part of the subject and, if properly applied, is beneficial. If the third contention is true then the best remedy would be to see that the massage is given before the contest. There is no reason why a man should not always have a good rub-out preparatory to his event. If he has been accustomed to massages it is true that he will probably note the difference if he does not get one before the meet. Fourth, some athletes are spoiled by too much attention but this is the fault of the trainer.

Summary—a good massage both before and after an event is beneficial.

II. Kind of Massage and When to Apply.

In the first place a massage should be pleasant to the athlete. Too many rubbers think that unless they pound and bruise the man who is on the table that they are not doing him any good. In the second place a massage should not be too long continued. It should start with the feet and progress up toward the heart. Then the fingers, arms and upper body should be rubbed. The fingers of the masseur should follow the veins and the arteries. It is well to use cocoa butter or some good massage cream or liniment, but it should be remembered that the value lies in the rubbing rather than in the liniment.

The day of a meet the man should warm up until he has a good sweat, then he should lie down and relax all of his muscles and have the trainer give him a good massage just before he goes out for his event. After his events he should have a rub-out to keep him from getting stiff.

If a man is over-trained and the coach desires to lay him off for a day it is a good plan to have him get a rub down but to take no work out.

III. Common Track and Field Injuries and Their Treatment.

1. *Shin splints.* This frequently occurs in sprinters, runners, and hurdlers. The remedy is rest. In addition, massage the afflicted part and apply hot cloths or use warm antiphlogistine or paint the leg with iodine or, better still, cover the sore spots with

a layer of icthyol to the thickness of a silver dollar. Cover with paper to protect the clothing.

2. *Pulled tendons.* This is usually caused by overwork or by straining a leg that has not been properly warmed up. When this occurs in an aggravated form the athlete will not be able to run for several weeks. If the tear is but slight, by reinforcing the strained part with adhesive tape, he may be able to go through his distance.

The only thing that can be done for a man who "breaks down behind" is to insist that he keep off his toes, strap up the leg with adhesive tape and apply hot applications and massage.

3. *Sprained ankles.* If the tendons are not torn loose, the ankle should be exercised daily. As soon as the injury occurs apply hot cloths to the ankle and massage it. This stimulates circulation, aids recovery and prevents adhesions forming. If the ankle was turned outward when the sprain was received, strap adhesive tape over the outside of the ankle to prevent further injury, then walk and run being careful not to twist the angle again. If the tendons are torn at the attachment, then rest is necessary and the ankle should be used as little as possible.

4. *Stone bruises.* It is easier to prevent these than to cure them after they have occurred. For prevention wear a piece of soft rubber in the heels of the running or jumping shoes. It is used by hurdlers and jumpers in all of the larger universities.

If a stone bruise occurs get a large bunion plaster and place it on the foot in such a way that the pressure will come outside of the sore spot.

5. *Abrasion and rubbed spots.* One of the most common difficulties with track men is sore feet. This can usually be prevented by a careful selection of shoes. Not very many men should wear shoes narrower than C and most of them should wear shoes on the D or E last. The most common injury is caused by wearing shoes which are too short. If the shoe rubs wear either a chamois pusher or a clean sock. Keep the foot and socks clean and if the skin is rubbed off a toe, cover the affected part with a bandage and a piece of adhesive tape.

6. *Miscellaneous.* Wash cuts with an antiseptic solution. Lysol is good. For boils keep the boil covered with a hot poultice or place a wet towel on the boil, and keep a hot water bottle on it. The reason for this is that the agents in the blood, which fight disease germs, such as the germs in a boil, work better in a warm medium.

7. *Training Diet.* The diet should consist of vegetables, fresh lean meat, such as roast beef or steak, roast mutton or boiled chicken, toast or bread with butter, fruits, cereals, boiled or poached eggs. A sample day's diet would be as follows:

Breakfast—Fruit, cereal (preferably rolled oats, rolled wheat or other home cooked cereals), toast, one glass of milk or cup of coffee.

Luncheon—Poached egg or plain omelets, mashed or baked potatoes, lima beans or garden peas, bread and butter, fruit, milk, tea or water.

Dinner—Roast beef or mutton, lettuce salad, creamed potatoes, bread and butter, custard pudding or fruit, milk, tea or water.

8. *If constipated.* Try to have the bowels move every day at the same time. Drink plenty of water and eat such foods as carrots, lettuce, asparagus, turnips, celery and cabbage. Eat also fruits, figs, prunes, and cereals that contain bran. Avoid fried and greasy foods, rich puddings, and pastry, fat meats and new breads.

EQUIPMENT

A great deal of care should be exercised in selecting the equipment to be used by track and field men. All of the members of the teams should be provided with sweat shirts and fleece-lined drawers of the same material, in addition to the regular track suits, for use in cold weather.

The sprinters, runners and hurdlers should use a light or medium weight running shoe with six spikes set in the sole. Short and sharp spikes should be used on hard and dry tracks, and full length spikes are necessary when running on a soft track. Hurdlers should wear a pad of sponge rubber, about one-quarter of an inch thick, inside the heel of the shoe to lessen the jar, and to prevent heel bruises. If the hurdle races are on the grass, or on slippery tracks, heel spikes should be worn. For cross-country running a shoe which is very similar to the jumping shoe is recommended. The cross-country shoe has no spike in the heel. It is made either with or without spikes in the sole, depending upon whether they are to be used on the pavement.

The jumpers, vaulters and weight men should use the standard jumping shoe which has six spikes in the sole and two in the heel. The heel has a reinforced counter to help in preventing the heel from turning to the side. For men with weak ankles the high top shoe is recommended.

Special care should be exercised in fitting the shoes. The majority of athletes should wear shoes made on the "D" last. A great many men make the mistake of wearing shoes which are too short. When the shoe is laced on the foot, there should be a space of about one-quarter of an inch between the big toe and the end of the shoe.

The standard shot, javelin, hammer and discus should be used. The brass covered shot and hammer are best because they keep their shape and resist wear better than the solid lead implements. The hammer wire should be fastened to a swivel set in the hammer head. This is to lessen the chance of the wire breaking. It is well to keep a supply of 36 piano wire on hand for handles. If the double grips are used they should be made triangular in shape just wide enough across the top to fit the hand. One of the grips should be one-half inch shorter than the other. If the single grip is used it should be made triangular in shape and of the width of the hand. For traveling purposes special made leather bags are advised.

CONSTRUCTION *of* TRACK AND FIELD

I. Character of the Track.

Most tracks are one-quarter of a mile long and oval in shape. These tracks usually have one hundred and twenty yards straight-a-way on the home stretch for the hundred-yard dash and the high hurdles. This necessitates running the two hundred and twenty-yard dash and the low hurdles around the turn, consequently some tracks are built with a 220-yard straight-a-way on one side.

This is highly desirable when it is possible to lay out the long straight-a-way. On such tracks the 440 starts at the same place as the 220 and finishes on the other side.

II. Track Measurements.

The track is measured 12 inches from the pole. The old method of measuring was to measure 18 inches from the pole, but, in order to make measurements conform with the Olympic rules, the National Collegiate Track Rules Committee adopted this rule for measuring. Where possible it is desirable to have the pole or inside edge of the track marked with a narrow cement curb. This gives a much neater appearance to the track, is more durable, and is required by the rules if records are accepted.

Iron finish posts should be firmly set in the ground at the various finish stations, and iron

stakes, marking the location of the hurdles, starts of relays and touch-off zones should be permanently located. Great care should me taken in surveying a track to get all of the measurements correct.

When relays are run in lanes all the way around the track, great care must be exercised to get the starting places and touch-off zones exact.

Never try to measure the lanes around a curve with a tape measure. Always have the measurements made by a surveyor.

III. Construction of the Track.

No two tracks can be built just alike because the difference in the terrain calls for different construction. When a track is being newly built and no expense is to be spared, it is advisable to excavate to a depth of about two feet. A heavy layer of coarse stone should be first laid and on top of this place a deep layer of coarse cinders. This should be rolled and packed until the track is level and even. On top of this place two or three inches of fine cinders, roll well, and add two inches of sifted soft-coal ashes. This surface binds together well and makes a very fast and exceptionally durable track. If soft-coal ashes are not available, use a top dressing of fine sifted cinders mixed with clay.

This will make an ideal track—in fact, if done properly and kept in good condition, there will be none better in the country. It will have all the advantages of a cinder track, in that it can not become muddy when wet, and weeds will not grow on it. It will have the appearance of a mixture

of dirt and cinders, and when properly drained, makes the best wet weather track. The same preparation makes the finest runways for pole vaulting, high jumping and broad jumping.

One of the distinctive features of such tracks and runways is that they require less care than any other type. It is easily leveled and only has to be resurfaced about every five years, which process is also very simple. Its only disadvantage is, that in weather that is too dry, it gets too hard and should be watered frequently.

The best way of keeping the track in good condition is as follows: First, have a pile of sifted ashes deposited near the track. If they stand here over winter so much the better. Second, rake the track and keep the surface level and smooth. Third, sift the fine ashes, then sprinkle them over the track. This can be done by scattering them with a shovel. Fourth, rake the track, then float it, then roll it with a heavy roller. After rolling, drag it with a heavy plank which has a piece of carpet or canvas nailed to the under side. To get a track in perfect condition it is necessary to float, rake, roll and drag it a good many times. When the cinders do not pack readily it is necessary to mix clay with them. Equal parts of clay and steam boiler cinders screened through a ¼-inch mesh will usually give the best results. If a track is covered with a two-inch layer, it will be five years before it needs a second dressing.

The track should slope gradually toward the inside. Underneath the track, tile should be laid to

carry off the water. These tile should empty into a large drain on the edge of the field. Most tracks are laid out around the athletic field and usually this field is likewise drained. If so the large drain pipe around the inside of the track can also be used to carry off the water which drains from the field.

A good dirt track is just as fast a track, but is cannot be used in wet weather, while most composition tracks are faster when moderately wet than when dry.

IV. Construction of the Field.

The location of the pits, circles and javelin throw line is shown on the diagram. The pits should be dug out to a depth of one foot and filled with fine sand and a little loam, shavings or sawdust mixed. The high jump and pole vault pits should be about 14 feet square and the broad jump 6′ x 14′. The pits and runways for the broad jump and pole vault should be so constructed that they may be approached from either direction. The runways for the broad jump and pole vault should be built of the same material as the track and a trifle higher than the level of the field. For the convenience of the contestants, when they are getting their take-offs in the broad jump and the pole vault, it is well to have two foot intervals marked on the sides of the runways.

The runway for the high jump should be composed of the same material as the track. A sod take-off is satisfactory but it will not stand con-

tinual practice. The approach should be a semi-circle thirty feet in diameter and should be level.

For the purpose of marking the boundary of the discus, hammer, and shot put rings, an iron band painted white and sunk level with the ground is very good. A piece of wood twelve feet long and two inches wide and painted white should be used to mark the javelin throw line.

HOW TO RUN OFF A MEET

I. General.

The success of any track and field meet depends upon three factors: first, weather conditions; second, class of the meet; and third, the method of conducting the meet. No manager is responsible for the weather; the class of competition is partly, at least, out of his hands; but he can and should see to it that the meet is properly run off.

For a big meet, it is well to have one man absolutely in charge of arrangements, grounds, program, etc. The best executive is the man who gets others to do the work. This is especially true of the executive in charge of a track or relay meet. Many men fail in this capacity because they try to do everything themselves. The following committees should be appointed to look after each special branch of the work:

1. *Games Committee.* This committee should have general supervision of the meet the days of the games. It should arrange for the officials, see that they are all assigned badges and notified regarding their duties. Furthermore, this committee should see that yarn is provided for the finish lines; Kelly pool balls for the clerk of the course, to use when the contestants draw for places; cross-bars for the pole vault and high jump; stop watches, batons for the relays; rakes and spades for the jumping

pits, hurdles, jumping standards, shot, discus, hammer, javelin, etc.

This work should be subject to the approval of the manager, but he should allow the committee to do the work and see that they do it.

2. *Program Committee.* This committee should get out the program, let the contract for printing, look after the distribution of the programs, and where advertising is solicited, secure what advertising is desired.

3. *Grounds Committee.* This committee usually consists of the ground keeper and his assistants. If there is no regular care-taker, then it is advisable to place one man in charge of the work of getting the track and grounds in shape.

4. *Reception Committee.* In the case of High School meets and sometimes for big meets, committees are appointed to look after the visitors. This committee should see that every visiting coach is given his tickets, a program and numbers. Visiting coaches always appreciate this very much because it is always considerable trouble to hunt up the manager in a strange place. Further, this eliminates confusion the day of the meet.

II. Officials.

Great care should be exercised in choosing officials. In selecting officials, try to get men who not only know the rules and have good judgment in enforcing them, but also pick men who will take an interest in getting the events off on time. One man

should be designated as head finish judge, one as head timer, one as head judge of the weights, one as head judge of the jumps.

It is advisable to furnish each official with a typewritten statement which will tell him where to report, the time to report, and to whom he should report. It is also well to give each official a program and his ticket of admission. A great deal depends upon the clerk of the course who looks after the drawing for places and keeps the events going on scheduled time.

III. Grounds.

Every precaution should be taken to see that the grounds are properly laid out and everything arranged in advance. The running lanes should be marked out, the shot-put, discus, and hammer throwing circles outlined, jumping pits spaded up and the take-off boards properly set.

It is always advisable to have a surveyor check up measurements, starting places, touch-off zones and finish lines. Further, he should see that the stands for the vaulting and jumping standards are level.

Every precaution should be taken to see that comfort of the spectators has been attended to and to be sure that they will not be allowed upon the track. One reason why track and field events have not been popular in some sections is because the spectators often do not know what is taking place. The announcer should tell the spectators before the start of the dashes, hurdles, and relays, the name

of the contestant who is running in the first lane, second lane, etc. Further, it is advisable to announce the name of the man putting the shot or competing in the other field events, and after their performances he should announce the results. This is sometimes accomplished by having a stand on the field to which is hung the number of the competitor and after it the number of feet and inches he jumped, threw the javelin, etc.

IV. Contestants.

The coaches are responsible for seeing that the contestants are acquainted with the rules and that they report promptly on time for their various events. It is almost always best to run off the meet on a time schedule. When this is done each coach should be given a copy of the schedule, so that he will know when his events occur. This places the responsibility upon him and ensures that the men will be on time for the events.

Coaches and trainers should never accompany the contestants to the starting point or inner grounds, for two reasons: one is that the men should be taught to do their best without the assistance of the coach during the event; and the other is that keeping the coaches off the track and inner grounds eliminates jockeying.

SPRINTS

I. Training.

A sprinter does not require so strenuous training as a distance runner. A distance run is a test of endurance, and the sprint, especially the short dash, a test of speed. At the same time it will pay the sprinter to do some work both in the fall and winter as well as in the spring. A good high school or college sprinter is often on the football or basketball teams and sometimes on both, and he does not have time or strength for work in sprinting in the fall and winter. If he is not out for the other teams he should practice sprinting nearly every day in the fall, and in the winter he should take plenty of calisthenic exercises, with special emphasis given to developing his abdominal muscles, and practicing deep breathing. Care should be taken in running on the boards not to get sore shins. This is a common trouble for sprinters, especially young sprinters.

II. The Start.

(a) The starting holes should be dug deep enough to provide a good brace for the feet. Dig the holes with the spikes or with a putty knife and be sure to make the back of the hole straight up and down or nearly so. It is well to stamp the back of the hole to make sure that it is solid.

(b) It is impossible to establish a definite rule for the places where the holes are to be dug because

this will vary with the length of the arms and legs of the individuals. As a rule the front hole should be about 12 inches from the starting mark and the back knee should be about even with the ball of the foot.

(c) The hands should touch the ground with the thumbs and fingers toward the front, fingers well together and hands about 18 inches apart.

(d) When in a starting position, waiting for the pistol, the back knee should be a few inches higher than the ankle. The back is parallel with the ground and the head is in a natural position. It is well to look a few yards ahead, but it is not advisable to try to look clear down the track. The weight is mostly on the front foot and hands, and the legs are relaxed. The push is mostly from the front leg. If the start is with the left foot ahead the right arm goes back and the left arm forward as the right leg takes the first step.

(e) When called to the marks, place the feet comfortably in the holes and rest the weight with the right knee on the ground. When the command "get set" is given, come up to the proper crouched position and remember not to tighten up the muscles, but to get fully set and then be mentally alert, awaiting the starting signal. Do not try to beat the gun or to anticipate the start. At the report of the pistol drive forward with the front leg and snap the arms into the running motion.

III. The Form.

The first three or four steps should be short and quick for the purpose of getting up momentum. If the first steps are too long they will have a tendency to cause the runner to straighten up too soon. He should not be clear up until he has gone at least ten yards. At the same time he should be careful to get his legs under him. If the weight is leaned too far forward, it would make the recovery more difficult and will cause the runner to stumble. He should ascertain by practice just how far forward to lean his weight.

The sprinter should run well up on his toes, in fact higher than in any other race. The leg should come up with the toe pointed straight ahead, and the foot should land well out in front. Lift the legs straight up in front of the body, keeping them in the same plane. Some runners acquire a reaching motion with the hip which increases the length of the stride. This is advantageous to sprinters with short legs. This should not be discouraged but few men can do it properly.

Keep the arms slightly bent at the elbow and push them forward with a snap. The arm motion is from the shoulder and not the elbow. There should also be a good backward swing. The swing of the arms should be a natural one, but the naturalness should be in keeping with good form. The arm-swing should be slightly across the body and as high as the chest. In this motion the left hand, for example, will reach in front to

the middle of the chest on the downward step of the right foot. When the left foot hits the ground on the next step, the right hand will come to the point where the left one had been on the preceding stride. Some begimniners do not use the arms enough in sprinting.

At the finish of a race use the arms vigorously, lift the knees higher and do not chop the stride. The body should lean slightly forward and the head should be held in a natural position.

Before getting on the marks take several deep breaths. Take time to do this and do not hurry to get down. Let the others wait for you. The starter will not give the "get set" signal until all men are on their marks. Do not worry about breathing in the race but breathe in a most natural way. After a hard 220 take a couple of deep breaths. It will be found refreshing.

Every sprinter should learn how to go a little faster the last ten yards. To do this, redouble your efforts, lift the knees higher and swing the arms harder. A proper throw and twist of the body at the finish is an advantage. This throw may be made by leaning the chest and upper body forward when breasting the tape. This motion must be timed exactly or it will not be effective.

In starting a 220 dash around the curve usually the three inner lanes are desirable because as a rule the track is beaten better, and, then to, the sprinter starts behind and can see how fast the field in front of him are running the first 100 yards. In running

on a curve do not run in the middle of the lane but keep as close to the inside as possible.

Do not run trials except on Saturday and then in competition. Do not run the full distance at top speed. It is a good plan for 220 men to run the first 120 yards at a good comfortable speed and then sprint for the finish line. Practice plenty of starts but do not do any jogging except to warm up.

IV. Training for Spring Meets.

If the Sprinter is starting his preparation for the spring meets he should procede as follows: The first few days should be spent in taking easy runs of about 100 yards up and down the track, running at about a half mile gait. A few minutes' rest should be taken before each run. In this work particular attention should be given to running in good form. At this time regular sprinting starts and high speed work should not be taken. After several days of this work and if the weather is warm, a few starts may be taken with the pistol in addition to the above work. No starts should be taken until the runner is well warmed up. After two or three weeks of this training the daily schedule for a week's work should be as follows:

Monday—Warm up by running up and down the track a few times. Then take four or five starts with the pistol and sprint from 25 to 50 yards at top speed. Follow this by taking two or three runs of from 100 to 150 yards in length running three-fourths of the distance at half milers gait and sprinting the last fourth at top speed. This work is

intended to develop finishing power and endurance. If the man is training for both the 100 and 220 yard dashes, he should be given considerable in 150, 220, and 300 yards, but these runs should be at moderate speed.

Tuesday—Warm up as on Monday, run two heats of 75 yards and then take a few more easy runs up and down the track.

Wednesday—The same as Monday.

Thursday—Warm up, take two or three starts with the pistol and then run two dashes of from 50 to 60 yards. Then run 300 yards at about a quarter mile gait.

Friday—Warm up and take a few starts with the pistol.

Saturday—Trials. If the sprinter is running only the 100 yards he should run two heats. If he runs the 220 also, then he should run one heat of the 100 and one of the 220. Both trials should be under competitive conditions.

A sprinter should have from one to two days rest before a meet and if the meets are held on consecutive Saturdays the schedule of work outlined above should be reduced.

V. Common Faults.

1. Not raising the back leg high enough at the command "get set."
2. Not digging the holes deep enough.
3. Making the first step too long.

4. Failing to swing one arm ahead and the other back when leaving the mark.
5. Straightening up too soon.
6. Swinging the arms too much across the body.
7. Running with the toes turned out.
8. Kicking the feet up too high behind the body, and leaning the body too far forward.
9. Throwing the head back and chopping the stride.

Illustration 1

Illustration 1. Shows the position taken by the sprinter at the command, "Take your marks." Note that the position is comfortable, and the muscles are relaxed. The runner will only need to raise the back leg to come to a set position.

Illustration 2

Illustration 2. Shows the "Set" position. The weight is mostly on the forward foot and hands. The hands are about 12 inches in front of the left foot. The right knee is slightly higher than the right ankle. The back is parallel to the ground and the head is in a natural position. The eyes are look-

ing down the track a few feet. The sprinter is already to drive forward at the report of the pistol.

Illustration 3

Illustration 3. Shows the first movements of the sprinter after the pistol is fired. The right arm is coming back and the left arm is going forward. The right foot is just starting forward for the first step. Note how far the body is leaning forward.

Illustration 4

Illustration 4. Shows the runner at the beginning of the third step. Note how the arms are moving in unison with the legs. Also note that the body is slightly more erect than in Illustration 3.

Illustration 5

Illustration 5. Shows the runner ten yards from the starting mark. He is now getting into full stride, but he has not yet straightened up quite so much as he will be when he is in his natural sprinting position.

THE MIDDLE DISTANCE RUNS

I. Preliminary Training.

Since it requires a great deal of endurance to run the middle distance races, the man who would run the 440 and 880 should begin training several months before the time of competition. An ideal plan would be for the runner to start in the Fall with cross country work. He should take easy runs every other day and gradually increase the distance. If possible, run in the country and keep off the pavements. However, a moderate amount of running on the pavements is better than running indoors. After three months of cross-country running, in the Fall, the middle distance runner should substitute gymnasium work for actual running. Basket ball, in moderation, is excellent for middle distance runners, as it adds variety to the training. It should never take the place of actual running, however. General calesthenics are splendid for body building purposes and should be used throughout the training season.

In the winter, if the weather permits, continue cross-country running during January and February. If the weather conditions make it inadvisable to run outdoors, and an indoor track is available, run on the indoor track. Of course, if the competitor is training for indoor meets, the work indoors will be more strenuous than if his work is preliminary to the outdoor meets in the spring.

Take a couple of weeks' rest between the winter training period and the spring work outdoors. Outdoor training, when possible, should begin about eight weeks before the first regular track meets are scheduled.

II. Outdoor Training Schedule.

The kind and the amount of work given to the individual members of the team will depend upon their previous experience, and, the amount of preliminary training which they have had. The average amount and kind would be about as follows: The first week should be spent in light running, for form, at distances of about a quarter mile. Run two or three separate quarters each day, with sufficient rest between each. Remember that these should only be taken at a moderate pace, not jogging and not sprinting, but just fast enough to acquire a running stride. At this stage of the work the runners should run enough to get muscle soreness to a slight degree. After the muscular soreness of the first few days has passed away, the runner's condition will permit of a slight increase in the amount and severity of the work.

Since judgment of pace is a very important essential in middle distance running, the runner should begin early in the season to practice judging his pace at different distances. The coach should time him in his daily work-outs so that the runner will learn to judge his speeds within one second of the actual running time for the various distances over which he practices. This daily practice and

timing of the runners should not be confused with time trials. The time in this practice will be much slower than the runner's racing speed if he is running his full distance.

It is a good plan to have the beginner run with the experienced men since they will help to teach the newcomers the pace and the form.

There are three kinds of running for training purposes: first, running about three-fourths of the actual distance at racing speed, for the purpose of judging pace. For instance, in the 440 training, the runner should run 300 yards at quarter mile speed. For the half mile he should run 600 or 660 yards at half mile speed. Second, running the full distance of the race at a pace somewhat slower than the athlete is capable of in actual competition. This training is for the purpose of getting the runner familiar with the distance of his race. Third, running over distance at a pace slower than in either of the other methods just described. This is excellent work for developing endurance and finishing power, and should be taken about twice a week. The over distance work for a quarter miler would be 660 or 880 yards; for a half miler, three-quarters or a mile.

A day's work in mid-season would be about as follows: Warm up by running up and down the track several times. If the runner is a quarter miler, he should run through 300 yards at a quarter mile pace. He should then walk around and rest for ten or fifteen minutes. When rested he

53814

should run a lap at slow speed and then go to the dressing room. For his next day's work he might run the full distance, followed the next day by the over distance, and the next the over distance. Each day he should warm up as described above—a few sprints and some starts with the pistol should be taken frequently. It is well to take a light workout on Friday and to run a time trial for the full distance on Saturday. In case the runner is training for both the quarter and the half he should work primarily over the longer distances. In all of the training runs the runner should finish with a sprint. The day's work should cover a period of about an hour. It is a mistake to rush through the training work. The day's work, it will be noted, begins with light work and ends with light work. The heavier training comes in between.

III. Form.

The stride in the middle distance is much the same as the sprinter's stride except that they are much more relaxed and less vigorous. The stride should not be so high upon the toes. The leg action in middle distance running may be expressed as throwing the foot well forward in landing. The arms should be swung from the shoulders like the arm movement in sprint running except that the arms and body should be more relaxed throughout the first part of the race. In the last part of the race when the final effort is made, all of the arm drive possible is necessary to assist the legs which have become weakened by the strain. The ten-

dency in the last sprint is to chop the stride. It is at this time that the arms should be used with the maximum effort to maintain the full stride to the finish. Do not use the reaching and pulling movement of the arms, but drive forward as in sprinting.

The breathing should be through both the mouth and the nose. The head should be carried in a natural position, otherwise the air passage will be restricted. The inhalations should be full and deep, for the more air which can be taken into the lungs the better.

IV. Running the Race.

In the 440, because it is very important that the runner get a good position at the first turn, when the pistol is fired the contestant should sprint for the pole, being careful to avoid fouling. Do not run on the outside on the turns because by so doing one runs farther than necessary. If the runner gets the pole and does not want the pace fast he can "float" on the first and second turns, causing the opponents to run outside to pass. If he does not get the pole and the pace is not fast enough, he should pass on the back stretch. Care should be taken so as not to lose a stride. If possible get into the lead before coming to the third turn, otherwise your opponent may slow down so as to make you lose a stride or run outside. When coming into the stretch run in a straight line to the finish.

In the half mile it is usually better to run the first quarter a trifle faster than the second quarter,

but the pace should be about even. Judgment of pace is very essential in the half mile run.

V. Common Faults.

1. Running too many time trials.
2. Misjudging the pace and either running the first half of the race too fast or too slow.
3. Running wide on the turns.
4. Tensing the muscles throughout the race.
5. Throwing the head back and chopping the stride at the finish.

VI. Suggestions.

Practice sprinting for the pole and do not let it worry you if you are jostled. Learn to move up through a pack of runners without going outside.

Work the arms hard on a finish. When finishing do not look back. Do not throw the head back and remember not to shorten the stride.

Middle distance runners should start from a crouch.

Illustration 1

Illustration 1. The start of the 2-mile relay in the 1920 Pennsylvania Relays where a new world's record was made. Note the position of the runners on the second stride after the pistol was fired. Each man is endeavoring to get into full stride quickly so that he may get a favorable position at the first turn. In this race each team is composed of four half milers.

Illustration 2

Illustration 2. Shows a runner finishing a half mile race in good form. Note the position of the legs and arms.

THE LONG DISTANCE RUNS

I. Preliminary Training.

Training for the mile and two-mile runs should start long before the outdoor training season begins; that is, the preliminary training should extend over a long period of time. This preliminary training, however, should be light and for the purpose of developing strength and endurance. If the athlete loses weight and gets up feeling tired in the morning he should lighten his work. If the man in question is to participate in several indoor meets, then, of course, he will train much as he would for outdoor meets. The following preliminary training suggestions are primarily for beginners, but most of the points mentioned will also be found of value to seasoned runners as well.

Cross-country walking, followed by cross-country running, is invaluable in developing heart, lungs and legs. Most beginners are too anxious to get results quickly, and they walk and run too far. The hikes and runs should be short at first and then should gradually be lengthened, as improvement is noticed. During the walks, practice deep breathing, that is, take a full breath, inhaling slowly, hold it for a few seconds and then exhale slowly.

General all-around calisthenics likewise are beneficial. They should be taken each morning before the morning bath, with the windows up, or in the

gymnasium with the class. Ten or fifteen minutes of these will suffice. The exercises taken should be those which especially affect the upper body; the legs will get plenty of exercise in actual running practice.

Basketball is one of the best games for distance runners. Most boys like to play basketball, and they get splendid training for endurance while playing this game.

If the runner has a gymnasium to train in, he should start his preliminary training in January, following the suggestions just mentioned, and, besides, he should practice starts frequently. Too much starting on the boards will produce sore shins, and this should be avoided. A splendid rule to follow, right from the start, is to enter some kind of competition every Saturday afternoon. At the first such events as short dashes will suffice. Later the distances should be gradually lengthened. For variety, sometimes let the competition consist of participation in some other track or field event. The main thing is to get into the habit of doing one's best every Saturday afternoon in competition. The runner should never run himself out at any other time during the week.

II. Training for the Spring Meets.

About two months before the main competitions, the regular outdoor training should commence. For the first few days the work should be as follows: Warm up by running up and down the track a few times and give special attention to the correct run-

ning form. Follow this by running from one to two miles with an easy stride. Care should be taken not to set too fast a pace. The runner should not finish exhausted. The work in training for distance runs should be so regulated that strength and condition will be acquired gradually. After the muscular soreness caused by the first few days of work has disappeared, the amount and kind of work may be slightly increased. At this time sprinting may be added and also easy runs of from 3 to 4 miles may be taken by two-milers and from 2 to 3 miles by milers.

After about four weeks of work the following is suggested as an average week's schedule for a miler. The two miler should run about twice as far as the miler in training, but the pace should be commensurate with the distance covered.

Monday: Warm up by running up and down the track for a few minutes and then take a slow mile. For instance, a man who can run a mile in about 4:40 should run the distance in about 5:10. Follow this by walking around the track until rested and then take two or three runs of one hundred yards in length at fairly good speed.

Tuesday: Warm up as on Monday and then run three-quarters of a mile at a mile pace. It is a good plan to time the runner in this work and to test his judgment of pace at the finish by questioning him regarding his idea of the time made in the run. He should be able to judge his pace within

two or three seconds. Finish the day's work the same as on Monday.

Wednesday: After warming up as on the preceding days, run a mile at a fairly good pace. A 4:40 man should run it in about 4:55. Finish up the work as before.

Thursday: Warm up and then run two half miles in about 2:20 or 2:25 each. A good rest should be taken between runs. Finish as on the other days.

Friday: Warm up and then take a few sprinting starts and then some light running around the track.

Saturday: Run a trial. Warm up as before a race.

III. Running the Race.

The legs should be lifted well out in front and the foot should land without chopping the stride. Run well on the toes and in training exaggerate the springing on the toes, but, of course, do not overdo this in a race. If unable to keep upon the toes and if the weight comes down on the heel the runner should persevere in his efforts to run on his toes for eventually the calves will become strong enough to bear the weight. Usually, the longer the race, the shorter the stride. Strive to acquire the proper stride in practice, so that it will be natural to run that way in the race.

The body should be held slightly forward. Do not lower the head, as it obstructs the breathing.

The arms should not be held too high, nor should the muscles of the arms be contracted, as in sprinting. Do not swing the arms back of the legs, nor far enough in front to cause the runner to wobble.

IV. Pace.

Judgment of pace is essential in distance runners. Men should know how fast they can run each quarter to get the best results. It has been proven that better time can be made by running a good fast pace all the way, rather than by running the first half very fast and the last half necessarily slower, or by running the first half slowly and the second half at top speed.

A 4:40 man should run his quarters somewhat as follows: First quarter, 68; second, 75; third, 69; and fourth, 68. A ten minute man in the two mile should run his halves about as follows: First half, 2:30; second, 2:35; third, 2:30; and fourth, in 2:25. When the record was established for the mile in the Western Conference the quarters were as follows: First quarter, 62 seconds; first half, 2 minutes 8 seconds; three quarters, 3 minutes 13 seconds; mile, 4 minutes 15 2-5 seconds.

The finish is important in distance running. A runner must know his sprinting ability, and know when to start his sprint for the tape. The average distance is 120 yards, though some men can sprint as far as 220 yards. One thing to keep in mind is that a man should never make two sprints.

V. Generalship.

In planning a distance race, for instance a mile, it is always advisable to follow pace, providing the opponent sets it properly and assuming that the runner has a good sprint, for it is harder to run the race in front than just behind. These things, however should be kept in mind: First, do not follow a man who has a poor stride; second, if possible, two teammates should run together; third, do not get into the second division of the field.

When to set pace: 1. If opponent has a good sprint and your man does not.

2. If pace is not fast enough to enable your man to run his distance.

3. When your man has a sprint, but finds the pace too fast for him, he should go out in front and set the pace with the idea of slowing it down.

How to pass opponent in sprint home. *Go by him fast,* for two reasons: first, because this keeps your opponent from knowing that you are going by him, and consequently he will not be able to prevent you from taking the pole; second, that, by doing so, you may discourage the other man, who thinks you are fresh when he is tired.

VI. Common Faults.

1. Running flat-footed.
2. Not making the proper use of the arms.
3. Running the first part of the race too fast.
4. Starting the sprint too soon.

5. Looking back.
6. Running outside on the turns.

Illustration 1

Illustration 1. Shows long distance runner in full stride. The body is leaned slightly forward, the head is in a natural position and the arms are swung from the shoulder-joint forward and back with the

elbow slightly bent. Note that the arm swing is only slightly across the body so that the hands come to about the same point in front of the body. Also note that the toe of the foot is pointed out straight ahead and is fully extended at the time of landing. It is apparent that the runner's muscles are fully relaxed.

RELAY RACING

I. Distance.

The most common relays are as follows:

1. One-half mile relay—each man runs 220 yards.

2. One mile relay—each man runs 440 yards.

3. Two mile relay—each man runs one-half mile.

4. Four mile relay—each man runs one mile.

5. Sprint medley—first man runs runs 220 yards, the second, 220 yards, the third 440 yards, and the fourth 880 yards.

6. Distance medley—first man runs 440 yards, the second, half mile, the third, three-quarters, and the fourth, one mile.

7. Shuttle relay—each man runs one hundred yards back and forth—that is, two men of each team are stationed at each end of the one hundred yard course, number one and three at one end, and two and four at the other. Number one runs 100 yards and passes the baton to number two who in turn passes to three. Three passes to four and he finishes.

II. How to Place Men in Relays.

The usual plan is to run the second best man first or third, the poorest man second and the best man last. This will vary under the following conditions:

1. In the mile relay there is a big advantage in getting the pole, consequently it pays to start a good man. Further, the man who starts should be strong and not easily tripped or he will lose out in the fight for the pole on the first turn.

2. It makes a good deal of difference to some men whether they are running in front or behind. For the man who cannot run well when behind, either because he does not judge pace well or because he gets faint hearted when touched off behind, place him so that he gets away with either an even start, or if possible with better than an even start. Some men do not do their best when out in front all alone. These men should be placed where they are sure to have to run their best to win.

3. If a man gets too nervous waiting for the stick it may be well to start him first.

4. Figure on what the opponents will do in the relays, and then decide whether you can run them off their feet by starting your good men first. This sometimes will work in distance relays because inexperienced men will often run themselves out in the first part of their distance in trying to make up ground lost by teammates.

III. Passing the Baton.

The baton is about one foot long and one inch in diameter and it is passed in a sixty-foot zone. Thirty feet of this touch-off zone is on each side of the finish line. As a rule the men line up on the

back line to start their run and the stick is received at about the middle line. This gives the rest of the distance to make sure of the pass or to get the baton in case of a miss. Since relay racing is intended as a test of running ability, and not of ability to carry or pass the baton, the rules committee favored anything that would lessen the chances of a team being disqualified for dropping the baton. However, since the rules require that a baton be carried, a great deal of attention should be given to the exchange. Many teams lose a great deal of time in making the exchange.

Some points to consider in passing the baton are as follows:

1. Practice having the starter judge correctly the speed of the runner. The pass should be timed so that the man can barely reach the baton.

2. Take the baton in the right hand from the previous man, and as soon as the stick is received change it into the other hand.

3. When reaching back for the baton reach with the back of the hand toward the ground.

4. The runner should pass the stick with his left hand.

5. The chief responsibility of making a good pass is on the man who delivers the baton.

IV. Receiving the Relay Baton.

As the runner approaches, the man who is to receive the baton should start his run slowly and should be careful to time his speed with that of the

runner. If the man who touches him off has a strong finish he can plan to get the baton on the far side of the middle line. If the approaching runner shows signs of tiring rapidly the man who is waiting should be careful, and not start too fast. One common fault of men receiving the baton is that they do not run a straight course while the exchange is being made, and consequently they frequently either cause their teammates to bump into them or they run into their opponents. The reason why such men do not run on a straight line is that running while looking backward has a tendency to make them run on a curve.

The last runner down the home stretch finishes just as in the quarter. The other man must plan on the station occupied by their teammates in the terms of the exchange. For instance, a team draws the fourth lane from the pole. This means that each succeeding runner must receive the baton in that lane. He cannot cross in and take the pole even if his team is in the lead. Such being the case some men plan to have the runner run through the men occupying lanes one and two and thus pass the baton to the next man in front of the middle line and near the pole. This, of course, does away with the necessity of the first runner leaving the pole. This, however, is wrong because it violates the spirit of the rule, and besides it is hard to run through the line in this way without causing a spill.

Try out your men in short distances and see in what order they run best. Give men plenty of prac-

tice in closing up the gap, especially in distance running. The rule in this is for the man to gradually go after the competitor, and not to try to overtake him too soon.

In shuttle relays it is better to have the men touch off rather than to pass the baton although this requires good officiating to see that men do not start before they are touched. In this race the men being touched gain a little by being in motion when touched. Of course, they must be behind the line at the time of being touched. If the half-mile relay is run in lanes, be sure to caution your men to run close to the inside line. The first and second lanes are the best, preferably the second, because the man who has the pole is forced to run out from the curb while the man in second lane can run almost on the line. There is an advantage in having the field in front.

Illustration 1

Illustration 1 shows the method of passing the baton. The man receiving the baton is well in his stride and the man who is passing it is just able to reach the other which makes the fastest possible exchange. Note that the receiver is reaching back with the palm of his right hand upward, and that he is watching the stick pass into his hand. The incoming runner is handing the other the baton with his left hand. He will keep a straight course as he finishes so as not to interfere with the other contestants. The men receiving the batons have a tendency to veer to the right of their course. This should be avoided.

THE HIGH HURDLES

I. High Hurdles.

1. *Regulations.* The standard distance in an outdoor high hurdle race is 120 yards. In this race there are ten hurdles set as follows: 15 yards from the start to the first hurdle, ten yards between the hurdles; and 15 yards from the last hurdle to the finish line. In indoor meets the distance is usually as long as the building will permit. In indoor races the start to the first hurdle is always 15 yards, and the distance between hurdles is always 10 yards. The distance from the last hurdle to the finish line varies. For instance, in a 50-yard race there would be 15 yards to the first hurdle, and 10 yards between hurdles. There would be four flights of hurdles but the distance from the last hurdle to the finish would be 5 yards. In a 75-yard high hurdle race there would be 6 flights of hurdles and 10 yards to the finish. The regulation hurdle is 3½ feet high, the bases are not less than 20 inches broad, the top bar has a length of 42 inches and a width of at least 3 inches and is painted white. The minimum weight is approximately 18 pounds. The hurdles are adjustable so that they may also be used for low hurdle races.

2. *Qualifications.* (a) Tall, rangy men usually make the best hurdlers.

(b) A high hurdler should have a fairly long stride and a fair amount of speed.

(c) His body and leg muscles should be supple and pliant. A good test for suppleness is as follows: Stand erect and bend forward with knees straight until the hands touch the floor. Next, raise one leg in front of the body and then the other to the side in the same manner that the legs are used in hurdling. Many men who try for the sprints but find that they are not quite fast enough for the dashes later try out for the hurdles and are successful.

3. *The Stride.* The majority of hurdlers take eight strides to the first hurdle. It may be necessary to start with a different foot in front from the one you are used to starting with, but it is better to change feet in most cases rather than to take either seven or nine strides. Sometimes it pays to vary this rule but not often. Anyway it is well to practice with either foot in front, because it may be necessary to change feet in the starting position if a hurdler gets set back for a false start. Otherwise the start is the same as in the sprints.

All hurdlers take three strides in between the hurdles. It never pays to take five. The average distance in jumping the hurdle is seven feet before reaching it, and about five feet on the other side. In order to leave the ground this far back the hurdler must have speed enough to carry him over. For that reason it never pays to run up to a hurdle in a half-hearted manner. The best hurdlers take

off about 8 feet from the hurdle, and land about 4 feet in front.

4. *The form over the hurdle.* As the take-off foot hits the ground on the last step before the hurdle, the front leg is thrown forward and straight ahead of the body. As it clears the hurdle the back of the heel is downward. The take-off foot follows and the knee is turned to the side with the heel held close behind. Simultaneous with the raising of the front leg, the shoulders and upper trunk are dipped forward. The arm which is on the same side as the back leg is thrown forward with the dip of the body. The other arm swings back similar to the arm motion in a sprinting stride. As the hurdler crosses the top of the hurdle the front leg is snapped straight down, and the back leg is jerked forward, throwing the foot ahead in position for the first stride. Care should be exercised to keep the body turned straight to the front. Special effort should be taken to make the first stride after clearing the hurdle a long one since the tendency is to land on both feet at the same time; this results in a loss of distance and makes it difficult for the hurdler to reach the next hurdle in three strides. The hurdler should strive to clear the hurdle as closely as possible without knocking it over. A very good practice consists of trying to knock a stick, which has been placed on the top of the hurdle, off with the seat. In clearing a high hurdle the head should not be raised higher from the ground than in running. By standing a few feet to the

side the coach may detect whether the hurdler is taking the hurdle too high.

5. *Training and Practice.* Beginners should practice over one low hurdle. When they have made satisfactory progress in stride and form, they should try two and then three hurdles, set at the regulation distance apart. Sometimes early in the season, if track and weather conditions are adverse, it is well to shorten the distance. After form and stride are acquired, several hurdles should be used but it is not advisable to run over the full flight very often. Always start the regulation 15 yards from the first hurdle and practice frequently the 15-yard sprint to the finish line. In practicing for form over the hurdle approach it with an easy pace, take the hurdle with regular form, then proceed to the next hurdle with five quick strides. Follow this procedure until several barriers have been hurdled. This practice is only to be followed when warming up or when working for form and should never be used in racing.

Hurdle races are won in the last three hurdles, so learn to keep your form and speed, and do not let a competitor run you off your stride. Keep your mind on your own race and do not watch your opponent. Remember you will be disqualified if you knock down more than two hurdles, and besides you are apt to trip if you do not clear the bar in a clean-cut manner.

The following is suggested as an average day's schedule of work for a man training for the high

hurdles. First, warm up by trotting up and down the track. In this work get well up on the toes and lift the knees high, using a springing stride. Next go over several hurdles, using a short stride, and practice form. Then take about three heats going over from 4 to 7 hurdles in each heat. Practice starting with the pistol. If there are several hurdlers they should practice running together. Finish up the track work by running from 150 to 300 yards at a brisk pace. The distance will depend upon the individual differences in conditions. It is well to devote a few minutes to the special exercises for suppleness and agility.

Do not hurdle for two days before a race. It is well to practice sprinting instead.

6. *Common Faults.*

(a) Failing to acquire the proper stride.
(b) Taking off too close to the hurdle.
(c) Turning the front foot to the side as it clears the hurdle.
(d) Sailing over the hurdle and trailing the rear leg.
(e) Failure to turn the rear foot to the side.
(f) Failure to dip the body forward.
(g) Turning the body to the side as the hurdler goes over.
(h) Holding the arms straight out to the side.

Illustration 1

Illustration 1. Shows the stride to the hurdle. The right foot is pointed straight ahead, the chest is bent forward so that it almost touches the knee. The head will not be any farther from the ground when the hurdle is being cleared than in a running stride. Note that the left arm moves forward with the right foot. The take-off has been made about 7 feet from the hurdle.

Illustration 2

Illustration 2. The body is still leaning forward. The right leg is just beginning its downward snap. The left leg is turned well to the side, and the left toe is pointed outward. The left foot and leg are just being snapped forward. The left arm is coming back and the right arm is going ahead.

Illustration 3

Illustration 3. The snap down of the right leg and the forward throw of the left leg are just being made which, if properly done, will bring the hurdler's right foot to the ground about three to three and a half feet from the hurdle.

Illustration 4

Illustration 4. This shows the hurdler making the first stride between hurdles. Note position of the arms with relation to the legs. An effort should be made to make this stride as long as possible. Note that the body throughout the stride over the hurdle as well as in the strides between the hurdles is held straight to the front.

THE LOW HURDLES

1. *Regulations.* The standard distance in an outdoor low hurdle race is 220 yards. In this race there are ten hurdles, 2½ feet high set as follows: 20 yards to the first hurdle, 20 yards between each and 20 yards to the finish. The low hurdle distance indoors is not uniform. Sometimes the low hurdles are used on indoor tracks with high hurdle intervals. The same rules apply both to high and low hurdle racing.

2. *Qualifications.* The same qualifications required of a high hurdler are likewise desired for a low hurdler with these points in addition, namely: that a man must possess a great amount of speed and stamina to run a full flight of low hurdles.

3. *Stride.* The standard number of steps taken to the first hurdle is ten, and seven steps are taken in between. If a man rises from his left foot he should take his position for a start with his left foot in front. That is, the first step should be with the right foot. In counting the steps in between hurdles the jump over the hurdle is not counted. When a hurdler takes seven strides between hurdles he takes off from the same foot each time. An exceptionally long and powerful stride is required to run the hurdles in seven strides over the full distance. The proper use of the arm swing as described under sprint running will be a

valuable aid to a low hurdler in increasing his stride, especially between the last three or four hurdles when he begins to tire. If a man has only an average stride he should take eight strides between hurdles. This necessitates hurdling off of first one foot and then the other. At first, hurdlers find that it is awkward to take the hurdle with the wrong foot, but by persistent effort this may be overcome, and in the course of a season's practice a hurdler should be able to take the hurdle with one foot as well as another. All low hurdlers should spend some time in practicing how to take off with the wrong foot because in a race they may be thrown out of their stride and thus not be able to cover the distance between hurdles with the usual number of steps. Young or immature hurdlers may be obliged to use eleven steps to the first hurdle and nine steps between the barriers, but this should be changed as early as possible in their athletic career.

4. *The Form.* The general principles of form in taking the low hurdles are the same as in the high hurdles with these differences: It is not necessary to dip the body forward a great deal or to raise the back leg so high. The best hurdlers take off about seven feet in front of the hurdle and land about three feet on the other side. In case a hurdler has difficulty in using seven steps between hurdles he should take a longer stride over the hurdle. The heels of the take-off foot hits the ground before the spring over the hurdle is taken, but on landing, the weight of the body should be on the ball of the

foot and the heel should not touch the ground with any force.

5. *Training and Practice.* The practice for the low hurdler should be about the same as outlined for the men training to run the high hurdles, with the exception that he should train over longer distances, using about three to seven hurdles for practice and running over the full flight once a week. His runs for conditioning should be from 220 yards to 440 yards. In case a man is working for both high and low hurdles he should divide his work equally between the two.

6. *Common Faults.*

(a) Chopping the stride.

(b) Sailing too high over the hurdle.

(c) Watching opponents.

(e) Running the first half of the race too fast.

(f) Turning the front foot to the side as it clears the hurdle.

Illustration 1

Illustration 1. The above illustration shows the low hurdler midway in his stride over the hurdle. His form is very similar to that used in the high hurdle, but with the exception that his body is not bent forward quite so much and his trailing leg is not turned so much to the side.

HIGH JUMP

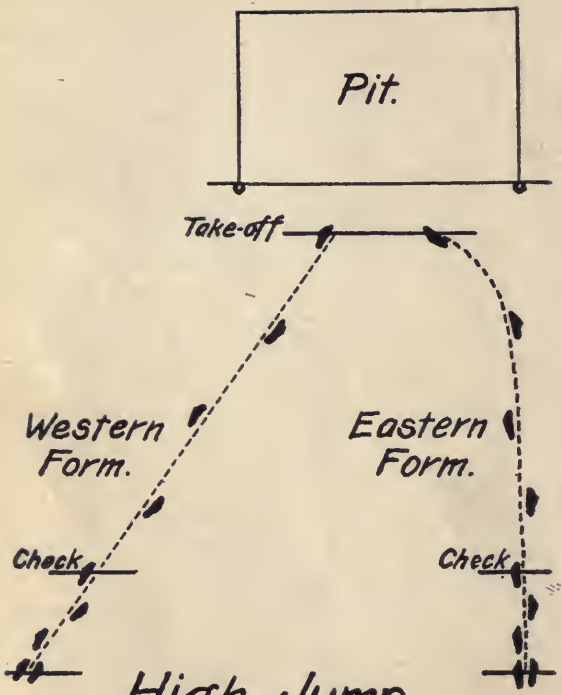
In most all track and field events there is a recognized standard form, but in the high jump there are great variations of form. If one were to watch a big meet he would probably see a number of different styles of jumping and likely would conclude that there was no standard form in jumping. The so-called scissors style of jumping with the back to the bar or setting up is the easiest to acquire but should be discouraged because very few ever have done well with this form. However, there are two forms of high jumping more commonly used than the others, and these are undoubtedly the best because in these styles of jumping the body is raised as little as possible from the ground and the leverage of arms, body and legs is used to the best advantage.

To distinguish between the two forms, the author calls one the Eastern form and the other the Western, for the first has been more prevalent in the East and the second in the West.

II. The Eastern Style.

If the jumper takes off from his left foot, measure back from 23 to 27 feet from the standard which will be on his right as he approaches the bar. This distance will vary with the stride of the individual jumper. The start is made from 12 to 15 feet back of the mark which has been determined as just out-

lined. The jumper should approach this mark and step on it with his jumping foot (in this case his left foot); four long springy strides should carrry him from this mark to the take off which should be 3 to 4 feet from the bar. The jumper should swing around so as to bring his right side next to the bar. The speed should be increased in the last two steps and he should settle down on the last step for the spring. As the jumping foot lands on the take-off mark, swing the right leg up diagonally across the bar. As the leg swings up the body inclines backward. Simultaneously with the swing of the right leg the left arm is thrown forward and upward. As the body rises in the air the head and shoulders are thrown sideward and downward. This throws the hips up and ahead of the body. The position of the jumper is now with his left side to the bar, at the moment of crossing. From this position the jumping leg is cut sharply backward and downward. This turns the jumper so that he lands on the jumping foot facing the bar. The left arm which is thrown up with the swing of the right leg is thrown downward as the hips are thrown upward, and is then again raised enough to clear the bar.



High Jump.

III. The Western Form.

Use the same distance as in the Eastern form, but in this style of jumping, if the jumper takes off from the left foot he should start from the left side at about a 45 degree angle from the bar. As the left foot strikes the ground at the take off mark, lean the body back and swing the right foot (which is the foot farthest from the bar) upward so that the body will be parallel to the bar, with the bar under the left arm pit. As the body crosses the bar a forward roll is made by turning the body face downward landing on the same foot the jump is made from, with the bar on the left side. Some jumpers using this style roll over the bar landing on the right foot when jumping from the left.

Care should be exercised so that the head and shoulders are not being thrown over too soon, giving the jump the form of a dive which is not permitted by the rules.

IV. Training and Practice

Beginners should always work at a height which they can easily clear, for two reasons, one being that if the jumper thinks of clearing the height, rather than his form, he will not perfect his form, and the other is that continual straining of the jumping leg is harmful.

Jumpers should take other exercises along with their training. Such work as sprinting, hurdling and javelin throwing are excellent.

V. Common Faults

1. Running too hard at the bar.

2. Failure to get an even stride.
3. Rising too far from the bar or too close. Suggestion: watch from the side and see if the body is at the greatest height as it crosses the bar.
4. Sitting up over the bar instead of getting a lay out.
5. Failing to get the turn which will bring the back to the bar at the moment of landing.
6. Keeping the body rigid instead of relaxed.

"Western Form"

Illustration 1

Illustration 1. Shows the jumper taking off from the left foot in the Western Form. Note that he is approaching from the left side of the bar, while in the Eastern Form he approaches from the right. Note also that the take off foot is nearest to the bar while in the other form the take off foot is farthest away from the bar. As the jumper makes the spring from the ground, the right leg and left arm are swung up at the same time.

Illustration 2

Illustration 2. Shows the jumper midway in his rise to the bar. He is just ready to kick the right foot out to the right and over the bar. The right leg and left arm are the parts of the body first over the bar. The left leg will immediately follow the right. When these motions are completed the jumper will be lying on his left side over the bar and facing away from the direction of his approach. At this point the forward roll over the bar begins.

Illustration 3

Illustration 3. Shows the jumper just clearing the bar. The face and body are turned nearly facing the ground. The right leg is being thrown up and the left leg thrown downward.

Illustration 4

Illustration 4. Shows the jumper just about to land. His left leg is coming down and the right is still high in the air. He is facing parallel to the bar and his arms are being used to assist in giving him an easy landing.

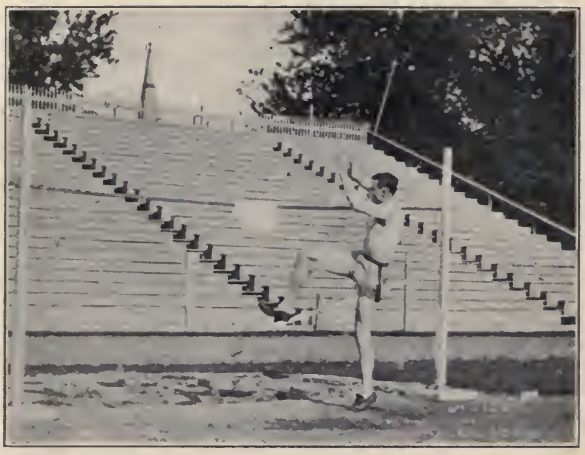


Illustration 1

Illustration 1. Shows the jumper taking off from the left foot in the Eastern form. The right leg and left arm swing up together. As soon as the left foot has left the ground in the spring, the shoulders and head are thrown to the left and downward. This throws the hips up and ahead and gives him what is known as the lay-out. Along with this the left leg is swung up in a manner similar to the right. When these motions are completed the jumper will be lying on his left side over the bar, facing the direction of the approach.

Illustration 2

Illustration 2. The jumper is now lying on his side directly over the bar. When in this position the jumper holds with his right leg and cuts his left leg sharply backward and downward. The foot crosses the bar with the heel ahead. This motion turns the jumper right side up and lands him on the jumping foot. If this cut of the leg is not made the jumper will land on his side.

Illustration 3

Illustration 3. Shows how the downward and backward cut of the left leg turns the jumper over as he comes down. He will land on his left foot facing or nearly facing his approach to the bar.

THE BROAD JUMP

I. Take-Off Board and Pit.

The take-off board is 8 inches wide and level with the ground and the jump must be made without touching the ground in front of the board.

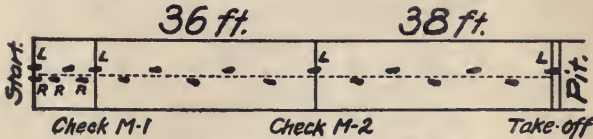
The pit should be at least six feet wide and filled with sand or soft dirt. The landing surface should be level with the take-off board.

II. The Take-Off.

Measure off 38 feet from the take-off board, then run through and see if the distance between the 38-foot mark and the take-off can be covered in six running strides. If 38 feet is too far, shorten the distance and if too short move it back. After determining this mark make note of it, and make use of the same distance every night in practice. When this mark is about right make another mark six strides back of the first. Then start back of the mark farthest from the take-off, running with easy strides and hit this mark with the right foot (that is if the jump is to be made from the right foot), then run through and see if the right foot comes on both the second mark and the take-off. If after several trials the right foot does not land on the second mark after six strides in between the marks, then the first mark should be changed and if after hitting the second mark, with the right foot, it does not hit the take-off board after six strides, then

this mark also must be moved. Since the run is the most important thing, great care should be exercised in getting the take-off correctly. The whole run should be about 100 feet. Some men have to run farther than others to get up speed. The run should gradually increase in speed, but the distance between the second mark and the take-off should be covered at top speed. Do not start too hard but be sure to get up full speed. The last stride should be a few inches shorter than the preceding strides, to assist the jumper to rise high in the air.

Different runways will require different measurements for marks. Running with or against the wind likewise make a difference in the length of the strides. In cold weather the stride will not be so long as in warm weather. In cold weather work on the take-off and do not do much jumping.



Run for Broad Jump.

III. Form in Jumping.

The form most commonly used, if taking off with the right foot, is to raise the left knee up high and then bring the other up, and then shoot both out as far as possible. The arms should be raised with the jump, held over the head while the body is in mid-air and then pulled down at the finish. Some men finish with the arms forward.

Some men use what is called the hitch kick form in the air.

This is performed as follows: The left foot moves forward, and then the right foot, as he travels through the air, thus executing one running stride with each foot in mid-air. Following this both feet are brought forward together for the landing. This gives the appearance of running through the air. Since these movements are made while the man is in the air, the arms and body must give assistance. Most jumpers who use this form cannot get high up in the air. The ideal form is the one where the hitch kick and the high rise are both attained. Some men acquire the hitch kick form naturally. They should have the principles of this form explained to them and should be encouraged to master this style of jumping. Others have great difficulty in learning this form and they should be allowed to use the other style.

IV. Training.

Do not jump too much, as it will injure the jumping leg. Three or four times a week and six to ten times a night is sufficient. In practice, the jumper should strike with his jumping foot a little bit back of the take-off line. Then when he gets into competition he will be running harder and will reach out more. The measurement is taken to the nearest break of the ground, whether inside or outside of the pit, consequently care should be taken not to fall back on the hands or buttocks. However, most beginners make the mistake of lighting with the

feet under them rather than out in front of them. If the feet are placed well out in front in landing, the momentum should keep the body from falling back.

If the jumper takes off from the right foot he will come down flat-footed on the last step before the take-off. The left hits the ground and consequently it is advisable to wear rubber padding in the heels of the jumping shoes to prevent stone bruises.

Sprinters usually make good broad jumpers. A good jumper will spring from 3½ to 4½ feet in the air. Some coaches place a hurdle or a bar in the pit to teach men to get height. This is not advisable.

V. Common Faults.

1. Not getting an even stride to the take-off.
2. Not allowing for the effect on the stride of cold weather, a heavy track or a head wind.
3. Not springing high enough into the air.
4. Not getting knees up and the feet out far enough in landing, thus causing them to plunge head first forward.
5. Touching the ground behind them with their hands.

Illustration 1

Illustration 1 shows the jumper about midway in the jump. The knees are well up in front of the body and are ready to be shot forward as soon as the jumper nears the landing. The arms are forward and are being used to maintain the balance of the body in the air. The arms will be brought down sharply just before the landing to assist in throwing the body forward.

THE POLE VAULT

I. Preliminary Training.

Exercise on the horizontal bar, parallel bar and climbing rope are excellent for preliminary training for pole vaulters. Dips from the leaning rest and pull-ups on the bar should be practiced. Vaulting in a big meet is more or less of an endurance feat and consequently a vaulter should not neglect his preliminary training. The pole vault is an acrobatic event, and the exercises mentioned above should be followed throughout the training period along with sprinting to develop speed and strength. These are splendid exercises to be used in addition to the actual vaulting.

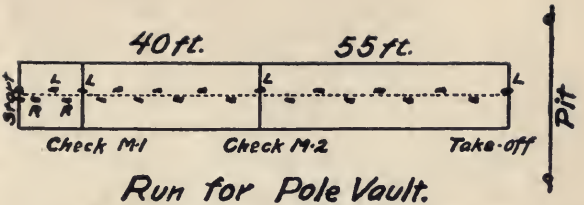
II. The Pole and Take-Off.

Sixteen foot bamboo poles are the best. They should be well taped especially where the hands grasp them. In choosing a pole select one with a good balance. Poles which taper rapidly at one end will not balance well. If there are too many cracks in the pole it is a pretty good sign that it is old and too dried out. Do not have a spike in the end of the pole used out-of-doors. The spring in the pole helps to snap the runner over the bar, but care should be taken not to get one that is too limber. A pole that bends too much is likely to break and will not snap the vaulter at the right time.

For a take-off board, set a board on one edge in the ground, and dig a hole about 6 inches deep. Slant the dirt back from the hole towards the runway so that the pole will slide into the hole easily. A blunt end of the pole is preferable to a sharp end.

III. The Run.

Measure off a take-off mark about 55 feet from the take-off board, and see if the vaulter can cover this distance in eight running strides. The vaulter should learn to go through his run with a medium, long and even stride. The run is measured from the take-off board to give a definite mark for measurement but the vaulter leaves the ground about ten feet back of the take-off board. This means that he should cover about 45 feet in eight running strides. If the vaulter comes too close to the take-off in running eight strides from the 55-foot mark, then the latter should be moved back. If this does not bring him close enough move the mark closer up. To practice getting this run, stand several yards back of the 55-foot mark then run through, step on the mark and take eight strides at nearly top speed, and then note where the take-off step comes. To determine where this mark should be, grasp the pole at the same height as when vaulting. Place the end of the pole in the hole and raise the hands over the head. Stand with body back so that the hands come a trifle in front of the head. See Plate 2. Mark the position of the feet. This mark will be known as the take-off, the 55-foot mark as check mark, and the 90-foot mark as the start.



Run for Pole Vault.

The entire run should be about 95 feet long. After determining the check mark, measure back 40 feet. Stand with both feet on this mark, step off with the right foot and run to the check mark, taking eight strides, gradually increasing the speed. The vaulter should land on the check mark on his take-off foot. If he steps over, move the starting mark back and vice versa. The above directions are for a vaulter who takes off from his left foot. It is important that the take-off be learned before vaulting is attempted. Allowance should be made for the wind, cold weather and the condition of the runways. If the runways are slow, the weather cold, or if the vault is against the wind, the run should be shortened.

IV. The Vault.

If the vault is made from the left foot the pole should be carried on the right side. The hands grasp the pole with the thumbs pointing towards the upper end of the pole, and about two feet apart. The pole should be carried with the point straight ahead and slightly elevated. In carrying the pole the body should not be turned to the side, but should be faced to the front as much as possible. Some

of the best vaulters are able to clear the bar by holding the pole with the upper hand as much as a foot lower than the cross bar when vaulting at their greatest heights. This, however, requires great strength in the arms and shoulders and perfect form. It is well to use a hold on the pole above the cross bar when vaulting at a low height and then to take hold only a few inches above this when vaulting at greater heights. It is well to use about the same height of grasp for all vaults since any great variation will change the run and the form. On low heights the standards should be moved back so that the bar is about one foot from the take-off hole. As the bar is moved higher the standards should be brought closer until the bar is almost vertically even with the hole when the vaulter attempts his highest heights. The reason for this is that as the height is increased the arc of the swing is more perpendicular than in the case of a vault over a low height.

As the pole hits the take-off hole the lower hand should be shifted close to the upper hand. Simultaneously with this movement the hands are raised above the head. These movements are both executed as the left foot hits the take-off. The feet should swing past the pole upward and straight ahead. The feet should be swung as high as possible. As the momentum of the vault begins to lessen, the pull-up of the arms begin. In pulling up, the body is slightly turned to the right to avoid hitting the bar with the hip and to enable the vaulter to push up

to a hand stand. From the hand stand the body is arched over with the chest towards the bar. At the moment of clearing the bar, the pole should be pushed back and the arms thrown upward. Suggestion: The coach may note the point of the greatest height by standing at one side. He can adjust the standards accordingly.

V. Common Faults.

1. Holding the pole with left thumb down.
2. Carrying pole diagonally across the body.
3. Chopping or missing the stride when approaching the take-off.
4. Not getting the shift.
5. Over running take-off when vaulting.
6. Going over with back to the bar.
7. Not completing swing before pull-up is made.
8. Throwing body for distance rather than height.

In the illustrations of the pole vault the vaults were made at a height of 10 feet, 6 inches, with exception to illustration 6, which accounts for the fact that the top hand is higher than the bar. The lower hand should have been shifted close to the upper hand.

Illustration 1

Illustration 1. Shows the vaulter in position to start his run for the take-off. The pole is held on his right side. This means that he should take-off with his left foot. Note the position of the hands with the thumbs held toward the top end of the pole. Most vaulters carry the pole with the hands farther apart. The front end of the pole is elevated and points straight ahead.

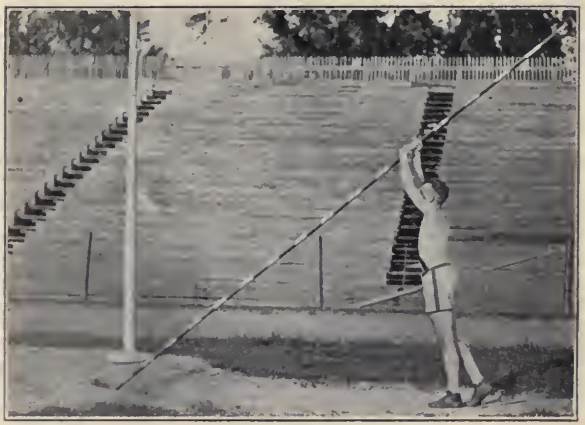


Illustration 2

Illustration 2. Shows the vaulter marking his take-off. His hands are held in the same position which they will be in after the shift is made and when the vaulter leaves the ground. Note that the feet are about 12 inches behind a line drawn perpendicular from the hands to the ground. It is very important that the take-off be marked at the proper distance from the hole.

Illustration 3

Illustration 3. The vaulter has just left the ground from his right foot and is in the middle of

the "pendulum swing." The hands are well above the head and the vaulter is facing squarely to the front. The swing should be prolonged as much as possible to allow the feet to swing high above the shoulders. After the body passes the pole the turning motion of the body begins.

Illustration 4

Illustration 4. Shows the vaulter near the end of the "pendulum swing." The feet are well above the shoulders and the turning motion is just being made. The pull-up with the arms is just being made at this time.

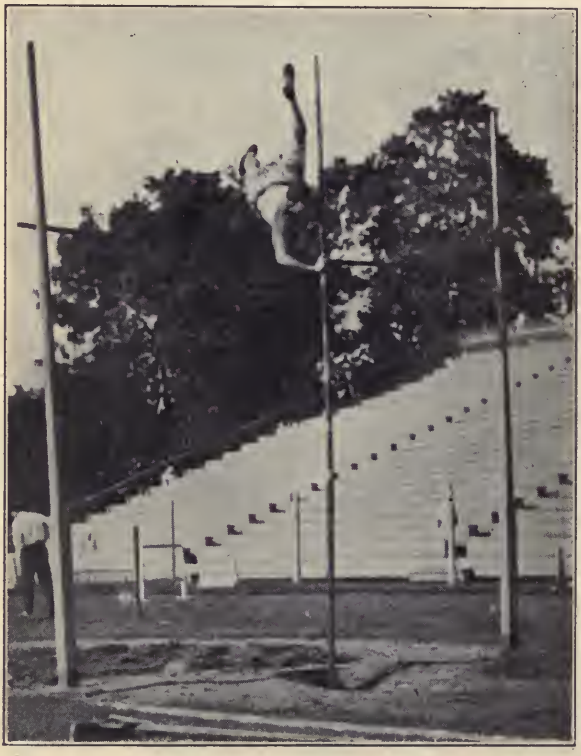


Illustration 5

Illustration 5. Shows the vaulter facing the bar at the completion of the turning motion. The pull-up ends with a hand stand at which point the feet are at their highest elevation. As the feet drop, the vaulter makes his final push up and away from the pole. Ordinarily the vaulter should land facing the bar, but in some instances the turning motion continues which causes the vaulter to land facing away from the bar. The position in landing is not important but it is essential that the vaulter swing his legs straight ahead and face the bar at the time he pushes ahead.

Illustration 6. Shows vaulter clearing the bar in perfect form at 13 feet. Note that he is just pushing away from the hand stand and the body is arched over the bar. The height is about as high as it is possible to make with the length of grip on the pole.

Illustration 6

THE SHOT PUT

I. Implement and Circle.

The weight of the shot for interscholastic meets is 12 pounds, and for intercollegiate, 16 pounds.

The diameter of the circle is 7 feet.

A brass shot is generally used.

Toe board—4 inches high and with a circumference of 4 feet and firmly fastened to ground.

II. Form.

Hold the shot with fingers slightly apart with thumb in front. Hold it with ends of fingers and the thumb with the weight resting on the portion of the hand where the fingers join the palm. It is a mistake to hold the shot with the fingers together and with the weight resting on the heel of the hand.

The arm position varies with different men. For most men the shot should be held in front of the shoulder, with the elbow down at the side. The elbow should pass close to the side in putting and should keep in line with the direction of the throw. This results in a push which is the best way to get a good drive.

Preliminary Practice Position: Place the right foot in the ring far enough back so that the left may reach the toe board. Then practice putting with the reverse without the hop, as follows:

The position of the left shoulder is in line with

the throw. Turn to get right shoulder behind the put. Reverse the feet by quickly changing, so that the right foot will be where the left was and the left where the right formerly was. The arm push follows the shoulder throw. Throw the weight of the shoulders and body against the shot at the same time making a sharp spring from the left to the right foot.

Beginners should watch the position of the hand and strive for a wrist snap. Do not jerk the arm but follow the put well through.

The left arm gives balance both at the beginning and end of the put.

At the start, the head turns half way around to get the shoulder motion and then it is turned so that the eyes follow the shot.

Travel and turn: Hop on right foot and land on the right. Then land left foot quickly, reverse and continue through.

Take position at the back of circle with the right foot at right angles to the throw and with left shoulder and side toward the front. Swing the left foot back and forward a couple of times, swinging left foot behind right foot on the preliminary swings, then hop on right foot and land on both feet. Do not jump high. Avoid pause in center of the circle and keep relaxed to end of delivery.

Start slowly and get the greatest speed from the time of landing in the middle of the ring to the end of the delivery.

III. Practice.

Always warm up with just the delivery from the reverse and then work on the hop and turns.

Work about thirty minutes a day but be careful not to injure the arm with over-work. As a rule when the arm gets sore it is because the man employs a throwing motion rather than the putting form.

Since a great deal depends upon the legs it is well to practice sprints and jumps. It is a good rule to work only on form during the week and then try for distance every Saturday in competition.

IV. Suggestions.

Up and down movements of the shot at the start do not do any good.

A quick pull back of the right shoulder just before starting the put and reverse will add several inches to the put.

The top of the toe board must not be touched by any part of the body.

For preliminary practice take regular calisthenic exercises each day and throw the medicine ball.

V. Common Faults.

1. Holding shot in the heel of the hand.
2. Putting without the reverse.
3. Hopping too high, which causes a pause in the middle of the ring.

Illustration 1

Illustration 1. Shows first position at the back of the ring. Note the position of the arm and the method of holding the shot.

Illustration 2

Illustration 2. The left leg is swung backward and forward two or three times preliminary to making the hop. The left foot is behind the right as the hop is started. The left foot swings forward to assist in the hop. In the hop the right foot should remain close to the ground and should land at about the center of the ring.

Illustration 3

Illustration 3. Shows the position in the front of the ring after the hop. The thrower is now in position to deliver the shot. Note that the position of the hand and arm are very similar to the position in Illustration No. 1. The thrower is leaning well back and his arm and shoulder are squarely behind the shot.

Illustration 4

Illustration 4. Shows the position of arm and

body at the moment of delivering the shot. Note that the thrower is on his left foot until after the shot has left his hand. Also note that the arm is fully extended, making a perfect follow through which ends with a snap of the wrist and fingers against the shot.

Illustration 5

Illustration 5. Shows position after the reverse with the weight on the right leg. The left leg and arm are used for balance.

THE DISCUS THROW

I. Implement and Circle.

The discus is 8⅝ inches in diameter and 1¾ inches thick, and weighs 4 pounds 6 2/5 ounces.

The circle from which the throw is made is 8 feet 2½ inches in diameter. The toe board is not used but a clearly defined white line should mark the circumference of the circle.

II. Form.

(a) Throw with reverse without the turn.

Hold the discus with the hand flat, fingers slightly apart, and with the first joint of the fingers over the edge. This depends somewhat on the grip of the contestant. A man with a big hand and strong fingers can take a lighter hold. The thumb is not over the edge.

In leaving the hand the discus should spin off the first fingers.

The angle at which the discus leaves the hand depends upon the position of the hand or arm. The arm turns to the left, and the back of the hand should be up. In a perfect throw the performer can see the front edge slightly above the back. To get a high throw there should be a low arm dip and vice versa for a low throw. At first the throw should be taught with a reverse without the turn across the ring. To do this, the man should stand facing the direction in which the throw is to be

made, with feet apart. Swing the discus back and forth two or three times, steadying it with the left hand at the top of each swing. As the arm swings back, step forward with the left foot, then deliver by changing from the left to the right foot. That is, the right is shifted to the position formerly occupied by the left and the left to the spot where the right was before the turn. This reverse enables the thrower to stay within the circle and helps to prevent fouling and enables the thrower to get his body weight behind the throw.

The throw is accomplished by the turn of the body which really throws the arm. The arm is held loosely and relaxed but straight at the elbow.

(b) Throw with single turn.

Start at the back of the ring facing the throw with both heels just inside of the back of the circle.

1. Left foot steps forward as the arm swings back.

2. Right foot crosses left with a forward step. Turn on the balls of the feet.

3. Left foot advances forward almost to the front of the circle. This is a quick step. This completes the first part of the turn. The rest of the turn is executed by the reverse, which occurs after the discus has left the hand.

(c) Position of the hands and arms.

The left arm is held well back at the reverse to help maintain the balance.

The right arm is always back until the final delivery. Most men make the mistake of not drag-

ging the arm behind as the body turns. The arm should be loose, and the steps are as if it were away from the arm.

At the start, hold the discus with the back of the hand towards the ground. The arm is then in position to throw with no unnecessary motions and there is no twist in coming out. This seems awkward at first, but men who learn this way improve faster than those who hold the discus with the hand uppermost at the start.

III. Practice.

To warm up, take several practice throws with just the reverse and then go through the turn. If only training for this event, take practice starts and jumps; for a great deal of a discus thrower's success depends upon the strength of his legs and the speed with which he can move them. Do not practice too long at a time. Seldom practive over half an hour or about twenty throws. Each man, however, should find out how much work he can stand, and he should always remember that it is better to underwork than to overwork.

Frequently a discus man will lose his form in the middle of the season. When this occurs start all over again and go through the practice slowly.

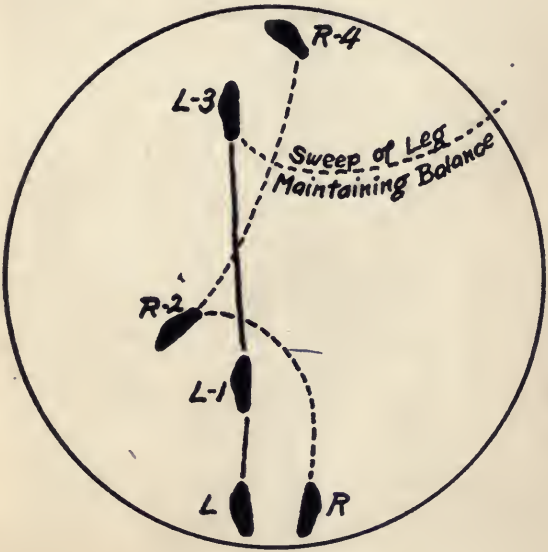
IV. Suggestions.

If throwing with the wind, make a higher throw with a lower dip of the arm. If throwing against the wind, throw lower by not allowing the arm to dip with the throw, and by holding the thumb lower.

It is advisable to practice throwing the discus both with, against, and across the wind.

Always try to perfect the form in practice, rather than to make a record. Best throws are oftentimes made with apparently the least effort.

It sometimes pays to practice for two or three months and then lay off for awhile.



Discus Throw.
Travel across Circle.

Practice throwing in competition every Saturday, if possible. One good way is to have handicap contests.

V. Common Faults.

1. The discus is not held tightly enough by the finger tips.
2. The back of the hand is not help up at the moment of delivery, and this causes the discus to sail at an improper angle.
3. The first turn is made too rapidly.
4. The arm is not far enough behind the body at the time that the reverse is begun.
5. The throw is made without a reverse.
6. The discus is thrown off the little finger instead of being spun off the first finger.

Illustration 1

Illustration 1. Position of thrower at the back of the ring making the preliminary arm swings. With the backward swing of the right arm the left foot steps forward, making the first movement of the body turn. Note the method of gripping the discus and supporting it at the top of the swing with the left hand.

Illustration 2

Illustration 2. The thrower has stepped forward with his left foot and is starting to pivot on the left toe. The right foot will come to the spot marked X. The pivot will then be continued until the thrower is in position to step near the front edge of the ring with the left foot. Note the position of the throwing arm which is trailing well behind the body.

Illustration 3

Illustration 3. The thrower has finished the pivot and has stepped to the front of the ring with the

left foot from which position the delivery is made. The illustration shows the throwing arm just as it swings around, making the throw. Note the position of the discus as it spins off the forefinger. Also note that at the time of delivery the thrower is standing on his left foot. The reverse of the feet follows immediately.

Illustration 4

Illustration 4. This shows the position of the

thrower just after the discus has left his hand. His throwing arm is swinging around. Note that the arm is fully extended and the foot reverse is beginning.

Illustration 5

Illustration 5. The thrower has completed the reverse by shifting his weight from his left leg to the right. The left leg is thrown around behind him to control his balance and thus prevent him from falling forward and out of the ring. The arms also assist in maintaining the balance.

THE HAMMER THROW

I. Implements and Circle.

The weight of the hammer for Interscholastic use is twelve pounds; for Intercollegiate use, sixteen pounds.

The length is not over four feet. The wire connecting the handles and the shot is number 36 piano wire.

The circle is seven feet in diameter and should be a well defined mark. An iron band 1½ inches wide and ¼ inch thick driven flush with the ground and painted white makes a good ring.

Handles: 1. Heavy tinner's wire. Right hand grip ½ inch shorter than left.

2. Single handle of heavier wire. Some of the best throwers use the heavy single wire. To do this they wrap the wire with tape so that they will not cut their hands, and then grip with the right hand over the left.

The best hammers have a swivel so that the wire will not twist easily. A ball-bearing swivel is the best.

Short men should use handles 3 feet 9 inches, 3 feet 10 inches, or 3 feet 11 inches long, depending upon the height of the individual. The thrower, however, should use just as long a handle as possible. Beginners should learn to throw a light hammer with a short handle.

II. Form.

First learn to swing the hammer around the head, and deliver while standing in the front of the circle.

Next practice the single turn, and then later the double turn. Some throwers succeed in executing the triple turn, but they are exceptional. Nearly any experienced thrower can throw farther with the triple turn, but it is harder to stay in the ring than when the throw is made with the double turn. Stand with the back towards the direction of the throw with feet spread about fifteen to eighteen inches apart. See illustrations. Swing the hammer around the head with a turning motion of the hips, making the lowest point of the swing come in front of the right foot. At this point of the swing the arms should be fully extended, and the hammer head should pass close to the ground. See illustration number 2. As the hammer head nears the lowest point of the swing the body-turns are executed as follows: The right foot is swung around in front of the left foot to a position about two feet behind the position originally held by the right foot. Meanwhile the body pivots on the left toe. Simultaneously with the placing of the right foot, the left foot is stepped back to a position even with the right. See illustration number 3. This completes the first turn and places the thrower in a similar position to the one previously occupied in the back of the ring. The knees should be slightly bent throughout the turn.

In using the double turn these movements are duplicated and should bring the thrower to the front of the ring in position for final delivery. In using the triple turn the distance used in turning must be shorter each time.

While making the turns remember to keep the arms and body straight. Do not pause between turns. The turns should be made with a continuous motion. This will give the thrower the necessary lead in the turning so as to enable him to maintain a steady pull on the hammer in making the throw.

In making the delivery the position of the feet is the same as that taken by the thrower in the back of the ring. As the hammer comes around in the final swing turn on the balls of both feet facing the direction of the throw. Keep the arms fully extended to give the proper follow through. When the hammer leaves the hands the legs are crossed. See illustration number 4. It is well to hold this position momentarily to secure balance and prevent fouling. Do not leave the circle until the throw is marked. In practice the thrower should always pause a reasonable length of time before leaving the ring so as to accustom himself to the conditions of competition.

III. Practice.

A great deal of practice is required to throw the hammer properly, and one should practice about an hour a day when learning the form. All forms of calisthenics and selected gymnastic work, as

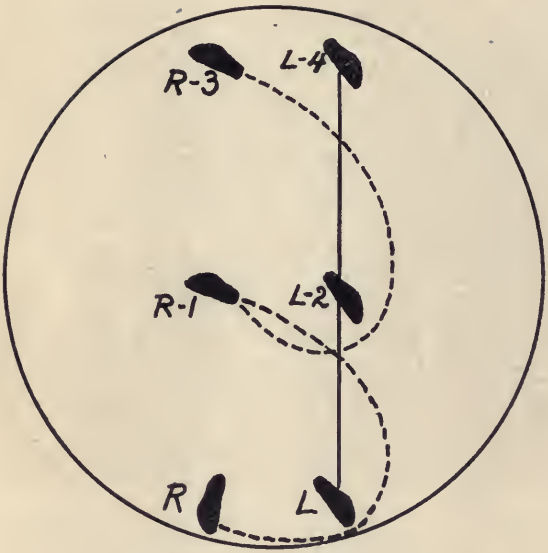
well as sprinting and jumping practice, are good for preliminary training.

Experienced throwers do not require a great deal of preliminary practice.

Beginners should first learn to turn by jumping around, but as soon as possible should learn how to pivot.

IV. Common Faults.

1. Throwing with the arms bent at the elbows.
2. Pausing between the turns.
3. Throwing over the left shoulder instead of turning the body ahead of the throw.
4. Stepping out of the ring with the right foot as the hammer leaves the hands. This may be corrected by leaning back against the throw and by holding a crossed-leg position.
5. Traveling out of the ring on the thrower's left. To correct this, bring the hammer to its low point in the swing in front of the left foot rather than in front of the right.
6. Making too great a circle with the hands when swinging the hammer around the head.



Hammer Throw.
Travel across Circle

Illustration 1

Illustration 1. Shows first position taken by the thrower. The hammer is laid out at arms length at the thrower's right. Note that the handles are gripped between the first and second joints of the fingers. The delivery will be from the spot marked X.

Illustration 2

Illustration 2. Shows the thrower making the preliminary swings around his head. As the hammer swings around, the weight is shifted from the

right to the left foot with each complete circle of the hammer. The hips turn with a twisting motion. The hammer head is at its lowest point straight out in front of the right foot, and the elbows are straight at this point of the swing.

Illustration 3

Illustration 3. Shows the position of the thrower just as he has completed the first body turn. His

weight is mostly on the left foot on which he is going to pivot, and his right foot is just beginning to step around to make the second turn. Note that the arms are straight and that the thrower is leaning well back against the weight of the hammer. Also that he has advanced about halfway across the ring in making his first body turn.

Illustration 4

Illustration 4. Shows the position of the thrower

at the instant of the delivery. Note how he has turned on his toes to give him the full reach of the body and arms in the delivery. He can now step sideward with his right foot to maintain his balance after the delivery. Some throwers step to the side with the left foot for the same purpose. Note that in delivering the hammer both feet are on the ground with the weight equally distributed.

THE JAVELIN THROW

I. Implement and Throw Line.

The javelin weighs one pound and three-quarters and is one inch in diameter. It is 8 feet 6 inches long and has a balance grip about three feet from the forward end.

The javelin must be held by the grip and be thrown from behind a take-off line which consists of a board three inches wide and twelve feet long sunk flush with the ground. Stepping over or on this line constitutes a foul.

II. The Form.

Grip the javelin with the thumb and the first and second fingers. Some men hold it with the whole hand but throw with the thumb and the first two fingers. The javelin should be on top of the thumb.

There are two ways of holding the arm in throwing: (1) on top of the shoulder, and (2) carried back to the rear. With either method the arm moves back at the end of the run.

The throwing motion is much the same as in throwing a baseball. It is thrown with a snap of the arm. The back should be used as much as possible to help with the throw. The chief thing of importance is to get the hand right over the top of the shoulder so that the force will pull through the center of the javelin.

To get the proper approach every step should be measured so that no thought about the step will be necessary when throwing in a meet.

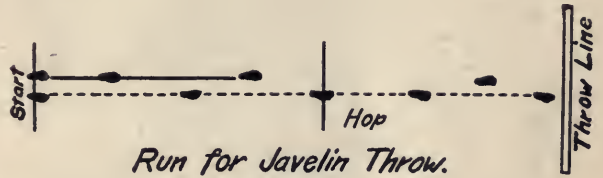
In preliminary practice, start with the reverse and make several short throws. Use a short run at first and keep adding to it. It is well to stop about a foot short of the finish line, for in competition the contestant will have a tendency to step farther, and care must be exercised not to step over the line.

The run should be about 45 or 50 feet long. In covering this distance the thrower should gradually increase the speed of his run as he approaches the scratch line. When he reaches a point about 15 feet from the scratch line he should be running at top speed. This is the place where the criss-cross or hop is started. The criss-cross is executed as follows: turn the body to the left and shift the right foot around behind the left foot. This will permit him to extend his arm behind him, thus enabling him to get the full force of his arm and body into the throw. Next, he steps forward with his left foot and springs from his left foot to the right foot as the javelin is delivered. This is the reverse which is similar to the reverse in the discus except that his speed carries him forward several feet. The left leg may be used to assist in maintaining the balance as the throw is completed to prevent the thrower from fouling.

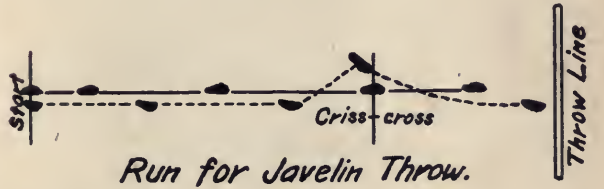
If the hop is used it should start at the same place as the criss-cross. It is performed by hopping

on the right foot, then by reaching forward with the left and this step is followed by the reverse.

After the reverse is made, whether from the criss-cross or the hop, the thrower may sometimes save himself from falling by running to the left along the scratch line.



Run for Javelin Throw.



Run for Javelin Throw.

III. Practice.

The practice throws should always be made with an easy motion. Do not continually try for distance but work always for form, and the distance will take care of itself in competition.

Javelin throwers often injure their arms and such an injury, like a baseball player's injury in the arm, may always bother.

It is not well for a shot putter to throw the javelin very much. Some good shot putters have been injured by throwing the javelin.

Take plenty of time in warming up and do not throw after the arm feels dead. Javelin throwers should practice sprinting and above all they should practice the run, criss-cross, and reverse both with and without the javelin.

IV. Suggestions.

Since all throws are measured from the base line at right angles to the hitting point, strive to throw as straight as possible. In throwing with the reverse, the javelin travels over the hypotenuse of the right triangle.

Each individual will possess difference in step and reverse. Strive to work out such details as the run, length of step at criss-cross, and reverse to fit individual differences.

Jumping shoes with heel spikes should be used especially on the sod.

Illustration 1

Illustration 1. Shows the methods of carrying the javelin at the side of the thrower. The javelin is pointing straight ahead with point slightly elevated. As the throw is made the hand is turned over with the back downward. This brings his hand and arm into position for the overhand throw.

Illustration 2

Illustration 2. Shows the method of carrying the javelin with the hand above the shoulder. As the hop is made preliminary to the throw, the hand and arm are dropped back into the same position as described in Illustration No. 1 for the overhand throw.

Illustration 3

Illustration 3. Shows the thrower just at the landing of the hop. The right hand is turned with the back down. The arm is being extended backward for the overhand throw. The left foot is just starting the forward step. The throw is begun when the left stride is complete.

Illustration 4

Illustration 4. Shows the thrower making the cross step which many throwers use in place of the hop. The arm is extended backward and the back of the hand turned downward the same as if the hop were used.

Illustration 5

Illustration 5. The thrower has stepped forward with left foot from the top of cross step, and is in position to make the throw which will be much the same as throwing a baseball overhand. Care must be taken at this point to keep the javelin pointed straight ahead and slightly elevated at front end.

The thrower should get his back and shoulder into the effort as much as possible. The reverse of the feet follows immediately after the throw is made.

Illustration 6

Illustration 6. The javelin has just left the thrower's hand. The arm is fully extended and the reverse is just beginning. Note the angle at which the javelin leaves the hand.

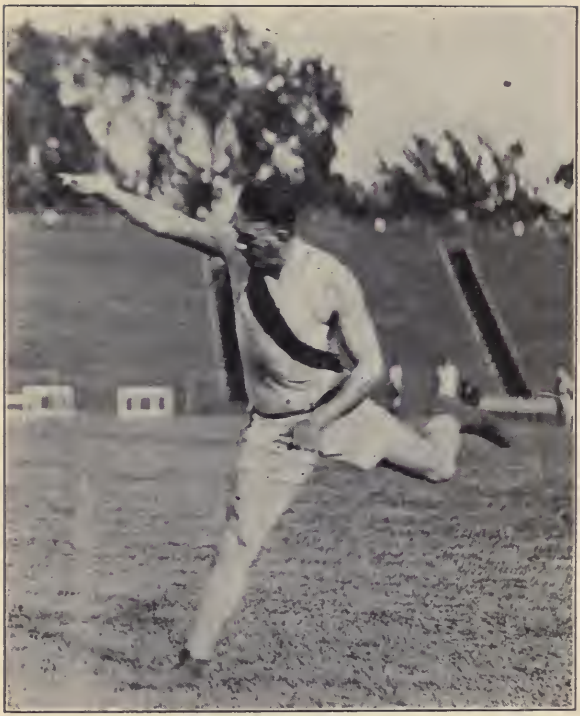


Illustration 7

Illustration 7. The javelin has been thrown and the thrower is just completing the reverse. His weight is on the right foot, and the left is used to assist in maintaining the balance. Sometimes the

thrower prevents a foul by running to the left along the throw-line. Following the throw the arm is whipped across the body in a similar manner to the form of a baseball thrower.

CROSS COUNTRY RUNNING

Cross country running when properly conducted, is a splendid exercise for general development. Cross country running was originally considered of value in developing distance runners for track contests, but it is now recognized as a separate sport with its dual and intercollegiate championship meets. The season is properly in the fall and early winter. The distances covered in cross country races are from 3 to 7 miles. The cross country runs in the United States are quite generally road races. The courses in so far as possible should be laid out on the sod and cinders; dirt roads are far better than pavements.

Regular track suits are usually worn, but in cold weather sweat shirts and gloves should be worn. Camphorated oil and wintergreen should be rubbed on the legs. If the weather is very cold it is well to wear fleece-lined drawers. It is best to wear socks under the shoes. Cross country men frequently get blisters on their feet. In this case they should not be opened but should be painted with compound tincture of benzoin.

Training for Cross Country Running.

Early in the season the work should consist of going over the full course three times a week as follows:

If training for a five-mile race start by running about a mile,then walk until rested, run again, then

walk and so on until the distance is covered. As the season advances the amount of running should be increased, and the amount of walking decreased until the runner is able to cover the full distance without difficulty. The practice runs should be taken four or five times a week later in the season. In the early season it is well to appoint an experienced man as leader to set a moderate pace and to see that none of the runners overwork.

The same relative practices should prevail in training for cross country running as in long distance running. The runner training for a five-mile run should arrange his work as follows:

One night he should run from three to four miles at about his five-mile pace. On another night he should run the five miles at a somewhat slower pace. On another night he should run farther than the full distance, for instance, about six or seven miles at an easy pace.

Judging the pace is very important in cross country running. As in the distance run, the pace should be even. The runner should learn from practice just how fast a pace he can maintain. If he goes much faster or slower than his normal pace he will not be able to make his best time. In the practice runs it is well to increase the speed for the last quarter mile and to sprint at the finish. When the runner is following his proper pace in a five-mile race, he will usually feel quite distressed at the end of his first two miles. At about this point he gets his second wind, his strength returns and he runs

much easier for the next two miles. For the last mile he must exert all of his will power to make the best possible finish.

The form in cross-country running is much the same as in distance running, except that the stride is shortened and the runner lands farther back on the ball of his foot. The arms should be carried naturally at the side and should be completely relaxed except in the finish of the run when they should be swung vigorously to assist the legs. In running up hill the runner should lean well forward and should shorten his strides. In going down hill the body is held more erect, and the feet are thrown along in an easy stride. The air should be taken into the lungs through the nose and mouth in long, even breaths.

In the progress of the race it is well for the runner to keep his mind on matters foreign to the race, and not to think about how tired he is. Runners prefer going over a cross-country course where the scene is continually changing, to running five miles on a track.

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